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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,133	07/21/2003	Theodore W. Rogers	34741-872	8021

7590 09/27/2005

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EXAMINER

KRAMER, DEAN J

ART UNIT	PAPER NUMBER
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3652

DATE MAILED: 09/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/624,133		ROGERS ET AL.	
	Examiner		Art Unit	
	Dean J. Kramer		3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 9-16, 22, 23, 27 and 33-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 17-21, 24-26 and 28-32 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>5/12/04, 7/21/03</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

1. Applicant's election of the species of Figures 2-11 in the reply filed on 8/23/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1-8, 17-21, 24-26, and 28-32 are deemed to be readable on the elected species. While applicant contends that claims 15, 27, and 33-35 also read on the elected species, it is pointed out that these claims each recite a "plunger device" which is shown in the non-elected species of Figures 12 and 13.
2. Claims 9-16, 22, 23, 27, and 33-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 8/23/05.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 19 and 28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. More specifically, there is no written disclosure in the original specification of sensors that can detect the edge of a wafer before the contact pad contact the wafer as is set forth in claims 19 and 28.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 28 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is no clear antecedent basis for "said plurality of contact pads", as twice recited in claim 28, or "said first and second gripper arms" as recited in claim 31.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Yokota et al. (6,623,235).

The patent to Yokota et al. shows an end effector having a pair of gripping arms for selectively engaging a substrate where the gripping speed and force at impact "may be suitably controlled to reduce impact forces on the substrate" (see col. 6, lines 24-28).

9. Claims 1, 2, 6, and 29-32, as understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Tamai et al. (5,702,228).

The Tamai et al. patent shows an embodiment in Figures 10-11B comprising a pair of gripper arms (152A,152B) whose movements are dynamically controlled by the camming engagement between rollers (154A,154B) and surfaces (157A,157B,158A,158B).

10. Claims 24 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Ayers (5,022,695).

Ayers shows a wafer handling mechanism comprising a linear actuator (20) and a Hall effect sensor (26) for detecting and controlling the force exerted on the edge of a wafer (see col. 6, lines 10-22).

11. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hosoda et al..

The patent to Hosoda et al. shows an embodiment in Figure 19 comprising a first (4) and second (5) gripper arm, means (6) for moving the gripper arms, and a means

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(190-196) for dynamically adjusting a gripping force on a wafer once the gripper arms are in a workpiece engaging position.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 3, 17, 18, 20, 21, 25, 26, and 30-32, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hosoda et al. or Yokota et al. in view of Ayers.

Hosoda et al. and Yokota et al. were presented above in sections 11 and 8, respectively, and substantially show the invention as set forth in the above claims except for a force sensing means on their gripper arms.

However, as presented in section 10, Ayers shows a wafer gripping mechanism wherein the force exerted on the edge of a wafer is detected in gripper arm (50) by a Hall effect sensor (26) such that the linear actuator (20) can be controlled to protect the gripped wafer.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a force sensing means on the gripper arms of either the Hosoda et al. or Yokota et al. end effector as taught by Ayers so that different sized wafers could be securely held but not damaged by the moveable gripper arms. In regard to claims 20 and 21, it would have been an obvious matter of design choice to

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use any well known force sensor, such as a load cell or strain gauge, as is commonly used in the robotics art especially since applicant has not specifically disclosed that this particular type of force sensor solves any stated problem or is for any critical purpose.

14. Claims 19 and 28, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over either Hosoda et al. or Yokota et al. in view of Ayers as applied to claims 3, 17, 18, 20, 21, 25, 26, and 30-32 above, and further in view of Fossey et al. (5,988,971).

Fossey et al. shows a wafer handling blade including a plurality of capacitance sensors (61,62) for detecting the presence of a wafer without actually contacting the wafer.

It would have been obvious to a person having ordinary skill in the art to provide either the modified Hosoda et al. or Yokota et al. devices, presented supra, with capacitance sensors similar to those shown in the Fossey et al. patent in order to properly orient the resulting gripper arms with respect to a wafer without have to first contact the wafer and possibly damage its surface.

15. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yokota et al. or Tamai et al. in view of Bacchi et al. (6,256,555).

The Bacchi et al. patent shows a wafer handling blade with thru-beam optical sensors (80,82) for accurately detecting the edge of a wafer.

It would have been obvious to one of ordinary skill in the art to provide edge sensors similar to those shown in the Bacchi et al. patent on the contact pads of either

the Yokota et al. or Tamai et al. device as an effective means of sensing the edge of a wafer.

Allowable Subject Matter

16. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Drawings

17. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

18. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "202". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

19. The disclosure is objected to because of the following informalities:

On page 12, line 15, the reference number "150" (second occurrence) should be changed to --160--.

On page 16, line 10, the word "to" should be changed to --too--.

Appropriate correction is required.

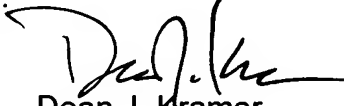
Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cox et al. (6,682,113) shows a pair of gripper arms moveable to grip an edge of a wafer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean J. Kramer whose telephone number is (571) 272-6926. The examiner can normally be reached on Mon., Tues., Thurs., Fri. (7:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen Lillis can be reached on (571) 272-6928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Dean J. Kramer
Primary Examiner
Art Unit 3652

9/22/05

djk
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